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A.D. 1868, 22nd JANUARY.

N° 223.

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S P E C I F I C A T I O N

OF

PETER HARROWER  
AND  
JOHN CHIENE STUART.

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SPRAY PRODUCER.

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A.D. 1868, 22<sup>nd</sup> JANUARY. N<sup>o</sup> 223.

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### Spray Producer.

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*(This Invention received Provisional Protection only.)*

**PROVISIONAL SPECIFICATION** left by Peter Harrower and John Chiene Stuart at the Office of the Commissioners of Patents, with their Petition, on the 22nd January 1868.

We, PETER HARROWER and JOHN CHIENE STUART, both of the City  
5 of Glasgow, in the County of Lanark, North Britain, do hereby declare the nature of the said Invention for “**AN IMPROVED SPRAY PRODUCER FOR THE PRODUCTION OF MEDICATED VAPOURS,**” to be as follows, that is to say :—

This said Invention consists generally in a new or improved construction of a small portable apparatus for producing a stream or jet  
10 of fine spray or vapour, used for medicinal and odoriferous purposes through inhalation and otherwise by the combined action of a jet of steam from a heated vessel, and a stream of liquid of a medicinal character from a phial or other vessel not heated containing it, to be termed or called the “Adams’ spray inhaler,” to connect it in honour  
15 with the name of the medical gentleman who was the first to test the merits of the Invention for producing jets or streams of fine spray or vapour for such purposes generally, all effected by this said improved construction of apparatus in a more safe, convenient, and economical manner than by those heretofore in use.



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*Harrower & Stuart's Improved Spray Producer.*

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And under one modification this Invention or its features of novelty, particularly and essentially consists in constructing the steam generator in the form of a vertical hollow internal and external "walled" conical vessel of a double, tubular, or annular form in horizontal section and triangular in radial vertical section, by having the lower part of its outer 5 case cylindrical, either attached to or formed by the upper part of the ordinary hollow vertical cylinder forming the main portable case containing the usual spirit or other lamp passed in through a door or lateral opening in the side near the flat bottom on which the lamp rests and the whole stands, and having the handle secured to and projecting out 10 laterally from the lower part of this case, where there is little or no heat, for the greater convenience and comfort of lifting and carrying the apparatus in its operation and use. This improved construction of the steam vessel set concentrically over the lamp besides being stronger gives a much longer and greater heating surface to the internal conical 15 tube forming the actual heating surface and funnel of the vessel, and the outer crown being also conical gives greater elegance, strength, and height to the vessel, besides giving a longer, narrow, or tubular water space all round the lower and greater part of the heating surface, and gives a greater height and capacity of steam space at the top of the 20 vessel or boiler above the water inlet, exposed also to a small part of the direct heating surface of the top so as to insure pure steam slightly dried or superheated passing off at the very top, where the branch pipe is formed for inserting and jointing the back end of the steam tube of the actuating nozzle through which the jet of steam acts, which are 25 as short as possible to prevent condensation therein, which improvements taken together enables this apparatus to be set to work sooner after applying the lamp with less waste of heat, and prevents "priming" or the blowing out of hot water through the steam tube and nozzle, and is a great security to its proper working without trouble or management, 30 and safety against burning the person using the apparatus over those heretofore in use. The steam tube and nozzle being set by preference in a horizontal position, while that of the liquid nozzle attached to it at right angles descends vertically from it into the phial or other small vessel containing the medicinal or other liquid desired to be made into 35 fine spray or vapour placed at the side of the main case within a small sheath or case attached near the upper part thereof for its reception, and inserted therein by preference from the under side of the sheath so as to go up over the liquid tube through the open mouth, or a hole



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*Harrower & Stuart's Improved Spray Producer.*

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in the cork for the purpose, until the tube reaches to near the bottom of the liquid at the time the phial is quite raised up to its proper position, when a hinged bottom is then clasped up by the spring or elasticity of the “bezels” for the purpose, or fixed by any other equivalent  
5 convenient fastening preferred, all without requiring to disturb the position of the duplex spray producing nozzle, which can thus be always fixed and jointed in the steam branch pipe or faucet in its proper position ready for use. The spray producing tubes, which are of the usual well-known construction, are preferred to be made of glass, but they may  
10 also be made of metal or other substance, which is proof against the action of the liquid chemicals likely to be used, and safe also in being used with hot steam. The water orifice for filling the boiler or steam vessel is placed at such a height or position as to regulate, show, and ensure that the boiler shall be sufficiently and yet not over filled with  
15 water at any time, and is by preference stopped by a plug of cork, wood, or india-rubber; but it may be stopped by a screw head or stop-cock if desired; and a small safety pressure valve may be fitted at the upper part of the steam chamber, although this is not necessary, as the open nozzle would always carry off the steam generated; and the whole  
20 vessel may be made of sheet copper, brass, tin, or other metal usually employed for making such liquid boiling vessels.

Another modification of this said Invention or improved spray producer for the production of medicated vapour consists in putting the medical substances in a solid, powdered, or in a partially fluid  
25 state into a small glass boiler or other vessel or retort, capable of standing the heat and chemical action of the substances placed within it, so placed over the top of the steam or water boiler and end of the heating chimney, up through it before named that the heated currents from the lamp escaping thereat will heat the vessel and vaporise or  
30 volatilise the matters within it, which thus rise in the vessel and pass off by a neck or tube formed or placed in it so as to be conveyed and escape either by an ordinary open orifice, or some of the well-known forms of nozzles used for spray producers, as desired, near enough to the steam nozzle to cause the jet of steam therefrom by its lateral action  
35 to draw the volatilised vapour or gas from the vessel and tube, and combine with it in the form of a fine medicated spray or vaporous stream in a direction favorable for being inhaled or otherwise used or applied, as described in reference to the former modification. The steam tube and nozzle in this arrangement is by preference formed of metal,



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and conveyed upwards from the top of the superheating steam chamber before named, and bent so as to deliver the jet by preference in a horizontal direction and position adjacent to the escaping tube of the volatilising vessel, which vessel may be made of various forms, such as that of a tube or globe, or of a cup or saucer shaped with a lid and 5 tube for conveying away the vapour as it is volatilised, and the vessel itself and its tube and the nozzle, when it has one, may be all made of glass, porcelain, or metal enamelled, or other material or substance employed for the manufacture of volatilising or boiling of chemicals, and which will stand their action and the heat necessary for so doing, 10 and this boiler may be placed in a small fixed or a portable open metal frame for its reception at the top of the steam boiler, all otherwise as herein-before described.

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